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E-Cigarettes or E-Quivalents: A Youthful Pandemic

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Abstract/Thesis

Smoking has been utilized as a cultural practice all throughout the world by various groups of people since the beginning of time. However, its harmful effects have only recently been explored in today's modern world. A comprehensive literature review was performed, and found that e-cigarette use is the new "cool" or "hip" thing to do among today's youth. The idea that e-cigarettes are a healthier alternative to smoking cigarettes is nothing more but a misconception touted by those seeking to make profit. As nurses it is our responsibility to ensure that patients understand that there are better ways of dealing with stress and that smoking in general is a threat to their wellbeing. If we as healthcare providers neglect patient advocacy, keeping our patients in the dark about the harmful effects of smoking, be it e-cigarettes or not, then we are essentially failing to provide the holistic needs of the public. Although most patients may be reluctant to quit their bad habits, it is not our job to judge but to encourage them to take the necessary steps required for them to live their life in the healthiest manner.

Further research is proposed to explore the various differences between e-cigarette use and tobacco use regarding withdrawal symptoms. Multifaceted aspects of nicotine addiction will also be analyzed such as race, ethnicity, gender, and age in order to find any correlations and differences between the latter. The overall objective is to bring to light the seriousness of e-cigarettes to healthcare workers, current users, and the general public.

Problem Statement

As we enter the year 2020, e-cigarette use has only grown among both current smokers and non-smokers, namely young adults. Tobacco smoking is responsible for up to 30% of heart disease related cases and is the single most preventable risk factor related to the development of heart disease (Yanbaeve, 2007). Although in recent years there has been many drawbacks on

tobacco use, it has led to a rising trend in tobacco alternatives such as e-cigarettes which were acclaimed to be a healthier alternative. As a result, e-cigarettes rapidly became the most commonly utilized smoking product, especially among young adults, with a 9-fold increase in usage from 2011 to 2015 (Corey, 2015).

E-cigarettes, also known as e-cigars, vape pens, or Juuls in layman's terms, are sophisticated devices responsible for delivering nicotine which create aerosol fumes that are comprised of different flavors and nicotine levels inhaled by various users. It's been made clear that there is sufficient evidence to suggest that e-cigarettes bear high levels of nicotine, volatile organic compounds, carbonyls, and particulate matter (Farsalinos, 2015). Therefore, e-cigarettes even pose major health risks to those that may be second hand or third hand smokers (Cheng, 2014). Many of the individuals mentioned in Mr. Cheng's study were of vulnerable populations such as infants, children, pregnant women, and anyone with a history of cardiovascular issues. As nurses it is our responsibility to be aware of these new trends and take action if we come across patients that may be unaware of the consequences of e-cigarettes. According to *A Report of The Surgeon General*, since the birth of e-cigarettes in 2007, there has been a growth of sales by 14-fold from 2008 to 2016. In a poll study, it was found that e-cigarette use among adults is mainly because they perceive them to be: (1) a better choice health-wise, and (2) less harmful to anyone around them while seniors smoked e-cigarettes simply to either use it as a cigarette deterrent or a means of escaping smoke-free policies (Brandon, 2015). According to the CDC article *Youth and Tobacco Use*, it was found that the main reason why young adults began using e-cigarettes had been linked to a curiosity of the flavors available. According to the same CDC article, 5.3% of e-cigarette users are middle schoolers while 16% are high schoolers which constitutes a 9- and 10- fold increase since 2015 (Brandon, 2015).

Although the topic of e-cigarettes is fairly new, it is certainly a topic worth discussing given our youth are the target of these large corporations seeking to extend their profit margins. As we enter the “roaring twenties” it is our responsibility as healthcare providers to be aware about the “roaring” effects of e-cigarettes, their properties, and most importantly their effects on our patients who may be using. The purpose of this paper is to explore the assertion that e-cigarettes are just as harmful as cigarettes.

Literature Review

The research literature utilized in this paper were from a variety of multiple sources such as CINAHL Plus and UpToDate via the Dominican University of California library. Five research articles analyzing the various societal perceptions of e-cigarette use and its harm, the statistics surrounding tobacco vs. e-cigarette use among certain groups, and the corporate tactics used to increase profit were analyzed and implemented into this paper in order to create this literature review. A combination of key words that contributed to the finding of the research articles were: youth and e-cigarettes, young-adults, tobacco, corporate, global, men, women, stress, nurses, and teaching. I found a total of eight articles in which five were chosen based upon relevancy. All of the articles mentioned look at the generalized effects that e-cigarettes have had around the world, the health detriments it poses upon both smokers and non-smokers, and the marketing strategies of e-cigarettes by corporate America upon certain demographically challenged individuals.

The literature review of this paper will be divided into three categories. First, articles discussing the prevalence and initiation of e-cigarettes/tobacco use among youth and adults. Second, articles examining the reason(s) for e-cigarette and factors contributing to continuous use. Third, articles looking at the marketing strategies of e-cigarette/tobacco companies.

Prevalence and Initiation

Czoli, Reid, Rynard, and Hammond conducted a study, “*Who is using e-cigarettes in Canada? Nationally representative data on the prevalence of e-cigarette use among Canadians*” (2015), that “examined prevalence and correlates of electronic cigarette (e-cigarette) use in the Canadian population, using data from the nationally representative 2013 Canadian Tobacco, Alcohol and Drugs Survey (n=14,565).” The researchers of this study utilized a logistical regression model that examined sociodemographic e-cigarette prevalence among Canadians while also heavily drawing conclusions based upon a statistical analysis framework. Through the use of the logistic regression model and statistical analysis, it had been found that an overall of 8.5% of Canadians that are 15 years old and older have tried an e-cigarette, while 1.8% have used an e-cigarette in the past 30 days since the conduction of the study. It had been found the prevalence of e-cigarette use among youth and current smokers were quite high and that prevalence did not differ dramatically between males and females. Smoking status had been found to be the strongest correlator of e-cigarette use given a whopping 37.3% of Canadians that currently smoke have tried an e-cigarette, 3% of non-smokers have tried an e-cigarette, while 5.1% of former smokers have also tried an e-cigarette.

Furthermore, the study had found that e-cigarette use was heavily varied by age in that prevalence was highest among youth aged 15-19 years old (19.8%) and young adults aged 20-24 years old (20.1%). According to the same article, researchers concluded that the majority of youth e-cigarette users were individuals that had never smoked, while the majority of adult e-cigarette users are current smokers. It was also found that dual use of e-cigarettes and conventional cigarettes was fairly common among current smokers. There weren’t many limitations to this study given this study utilized a nationally representative survey via a

logistical regression model. The study could have examined, however, the rates of e-cigarette prevalence among certain racial groups which could have potentially strengthened the assertion that people that come from socioeconomically poorer backgrounds are at high risk for both tobacco and e-cigarette use. The study did a great job of examining e-cigarette prevalence among targeted populations such as youth and young adults while also comparing the rates of prevalence among both men and women. This data could be extremely useful to nurses who may very well come across youth that could be at risk for smoking or other harmful ways of coping with stress (Czoli, et al, 2015)

Researching the age at initiation of e-cigarette use versus other tobacco products, Evans-Polce, Veliz, Boyd, and McCabe (February 21st, 2020) had examined trends in the age of initiation of e-cigarettes across 5 cohorts and how those trends compared to those observed for other tobacco products in a large, nationally representative sample of young persons in the United States. A quantitative survey by *The National Youth Tobacco Survey* (NYTS) was used to examine a cross-sectional national average sample of middle schoolers and high schoolers (6th-12th grade) in both public schools and private schools. The primary age group focused on in this study were 16- and 17-year old's given the study provided the possibility of their e-cigarette use beginning at 12 years of age (the emergence of e-cigarettes began when the first cohort of 16 and 17-year-old youths of 2014 in this study were around the age of 11-12 years old). A total of 26,662 youths between 16 and 17 years of age participated in the *National Youth Tobacco Survey* (NYTS) between 2014 and 2018 with an average response rate of 76.2%. All of the youth were asked at what age did they first initiate not only e-cigarettes but also cigarettes, cigars, and smokeless tobacco use (i.e. dip/chewing tobacco). The response options had ranged from youth of 8 years or younger to 19 years old whereby the age categories were recorded as 12 years old

or younger, 13 years, 14 years, 15 years, 16 years, or 17 years. The study concluded and found that 63% of 16- and 17-year old's that were part of the 2014 cohort began using e-cigarettes, compared to 42.7% of youth of the same age group that were part of the 2018 cohort. The study shows that there was a significant difference in the age of initiation of e-cigarettes among the cohorts while there were no significant differences in the age of initiation of cigarettes, cigars, and smokeless tobacco. Unfortunately, the study did have its limitations considering much of the information was based on self-reported data and omission of tobacco use. Also, given the nature of the data is cross-sectional, the study relied on retrospective reports of age of initiation which could have introduced the potential for recall bias. Considering the study shows that the age of initiation of e-cigarette use was younger among more recent cohorts, it is clear that this is a pandemic that has been masked for quite some time, therefore long-term health repercussions are certainly of concern for not only users but healthcare professionals (Evans-Polce, et al, 2018).

Causative Factors

Harrell, Brandon, England, Barnett, Brockenberry, Simmons, and Quinn (2019) conducted a qualitative study to observe e-cigarette expectancy themes among young adults. The researchers recruited young adults (between the ages of 18-29) from a large metropolitan city in the southeastern United States. The stratification of e-cigarette and cigarette use was split into four categories: cigarette users; cigarette users; dual-users; and nonusers. Only a total of 49 participants were included in this study while 14 interview sessions total were conducted. There had been three cigarette focus groups (2,2,3), three e-cigarette vapor focus groups (2,2,8), two dual user groups (2,4), and four young adult nonuser focus groups (3,5,5,8). Researchers found that the majority of young adults in the e-cigarette vape group were also ex cigarette smokers (58.3%) while most cigarette users never established a consistent pattern of e-cigarette use

(71.4%). In addition, nearly all dual-users in the study were daily cigarette smokers (75%). Many of the participants noted varying positive effects of their e-cigarette use in regard to sensory experience and stimulation. The positive reinforcement effects of e-cigarettes warranted three additional themes to this study which included sensorimotor experience, stimulation, and taste. The term “sensorimotor experience” was used as opposed to “sensory experience” to include hand movements given the fact that many vape users noted that vaping allowed them to do “something” with their hands while craving the act of inhaling smoke. One e-cigarette user in this study stated “I’m a twitchy person. I played drums when I was little and always had to do something with my hands. Smoking helps with keeping my hands busy and always doing something.” Taste was also a recurring topic for not only e-cigarette users but nonusers as well. A nonuser stated “He [my friend] has a bubblegum flavor and I love the bubble gum smell. And I’m like ‘that smells really really good. I bet it tastes just like bubblegum.’ But then I’m like ‘I probably shouldn’t do it.’” Other participants of the study also acknowledged the sensory stimulation effects of e-cigarettes with the word “buzz” coming up often to describe the e-cigarette experience. Participants also noted interpersonal relationship benefits with e-cigarette use stating the ability to expand friendships and “feel like you maybe belong.” As to the negative aspect of e-cigarettes, stress reduction was reported as the most negative affect mentioned in the groups. All groups (cigarette user, e-cigarette users, dual users, and nonusers) felt that stress relief was the main reason for e-cigarette use among other reasons such as weight reduction and boredom reduction. Nonusers reported observations such as people vaping as “a stress reliever” and that some users “can’t function properly” without e-cigarettes. Regarding weight reduction or appetite reduction, there had been mixed reviews. A dual user in the study stated while cigarettes certainly curbed their appetite, e-cigarettes did not give the same “I don’t feel like

eating” effect that cigarettes give. Boredom reduction responses were somewhat similar in that nonusers felt that e-cigarette vaping had minimal effect on boredom reduction and that one bad habit may lead to another, while e-cigarette users believed vaping did curb boredom. Overall, the study did its best in attempting to understand the various beliefs regarding smoking. Researchers were clearly limited in the amount of subject they were able to work with. Another limitation in the study had been that 69.4% of participants were male with women comprising only 30.6% which exemplifies a lack of diversity within the study. Overall, although the sample size was drastically small, the purpose of the study was the “identification of themes for further field testing” whereby the study fulfilled its purpose laying down the foundation for other researchers to investigate the pandemic e-cigarette vaping has become (Harrell et al, 2019).

Amrock, Lee, and Weitzman (2016) used data from the *National Youth Tobacco Survey* (NYTS) via a repeat cross-sectional survey of grade 6 to 12 students in the United States regarding their perceptions of e-cigarettes. Stratified cluster samples were utilized among the students, students being from various types of schools such as public schools, private schools, and secular schools. Cross-tabulations and logistical regression models were also used to assess student responses. Two sets of survey questions were asked of students. The first set of questions consisted of the “respondents’ perceptions of relative harm regarding certain tobacco products in comparison to cigarettes. The second set of questions assessed the respondents’ perceptions of addictiveness. The average marginal numbers reported estimated average percentage points via the altering of each covariant among the study samples. In 2014, 73.0% of US youth believed that e-cigarettes were less harmful than cigarettes while 20.2% believed smokeless tobacco was less harmful and 25.8% believed cigars were less harmful. To compare, it had been found that 47.1% of US youth believed that e-cigarettes were less addictive than cigarettes with 14.0%

believed smokeless tobacco was less addictive than cigarettes and 31.5% believed cigars were less addictive than cigarettes. Given researchers utilized the *National Youth Tobacco Survey* between 2012 to 2014, the sample size was enough to provide a substantial amount of data. Although this study was quite small, it still brings to light how vulnerable youth are to big tobacco and vaping companies that provide misinformation regarding their products (Amrock et al, 2016).

Marketing Strategies

Begay, Soto, Baezcondo-Garbanati, Barahona, Rodriguez, Unger, and Smiley (2020) performed a study that utilized eight health representatives that traveled to various convenient stores both in and around Native American tribal lands in California. The goal of the study was to figure out how tangible e-cigarette, cigarette, and vape products were in proximity to Native Americans in California and in what other ways tobacco companies draw appeal to their products. The eight health representatives were handpicked by the Navajo and Pueblo tribal council leaders prior to the conduction of the study for reassurance of proper representation in the study. The study examined 96 retail stores with 32 (33.3%) out of the 96 stores were gas stations/convenient stores, 28 (29.2%) were grocery stores, and 21 (21.9%) were tobacco focused retailers. Also, through statistical analysis, it had been discovered that 14% of e-cigarettes and other tobacco products were located within a Casino. Furthermore, the study concluded that the majority of retailers were within a one-mile radius (41.9%). To further analyze what was sold at these 96 stores, researchers found that 52.1% sold e-cigarettes, 39.5% sold flavored e-cigarettes, 27% sold vape pens/vaporizers, and 25% sold flavored vape pens/vaporizers. What the study also found had been that nearly all products in the 96 stores observed were discounted items. It's clear that big tobacco companies and e-cigarette companies are using the socioeconomic

disparities of native peoples to their advantage by making their products affordable. According to data from the CDC's National Youth Tobacco Survey in 2013, only 10.38% of Native American youth between the 8th grade and 12th grade said they've never tried an e-cigarette while 4.37% have used an e-cigarette in the past 30 days from the date of the study. The same CDC study found that between 2011 and 2013 e-cigarette use tripled among all races of high school students increasing from 1.5% to 4.5%. Given how sacred tobacco is to Tribal members, it may be the case that tribal and non-tribal retailers are discounting tobacco with the intent of making tobacco more affordable. However, these retailers are inadvertently making cigarettes and vaping products easier to access by Native American youth. Discounting tobacco and vape products are also observed on non-tribal lands where companies use price reducing measures to increase demand among youth and price-sensitive consumers in efforts to increase profit. The findings of this study provide information that could lead to substantial marketing regulations that could further stimulate policy changes such as higher taxes on tobacco and vape products and advertising restrictions. Some of the weaknesses of the study included the limited amount of retail stores included alongside the number of health representatives however this study was the first to document tobacco and vape retailers in California (Begay et al, 2020).

Theoretical Framework

The theorist that is most fit for addressing the subject of e-cigarette use is Abraham Maslow. He was an American psychologist who is well known for his creation of the theory Maslow's hierarchy of needs which address the prioritizing of human needs and the eventual culmination of self-actualization. Over the many years of studying the art of psychology, Maslow came to the conclusion that among the hierarchical pyramid, if an individual were to make it to the peak of the hierarchy, they begin the process of self-actualization. Self-

actualization is defined by Maslow as the “fulfillment and eventual realization of an individual’s capabilities/talents.” This emphasis upon human needs and the final step of understanding oneself mirrors the many issues youth, especially in North America, face amid a time when technology is booming, online social networking is a norm, and unrealistic idealism prevails.

Given the historical roots of tobacco use, e-cigarettes present an alternative route towards achieving social acceptance. According to Maslow in his book *The Farther Reaches of Human Nature*, chapter 13, he states "Another goal which our schools and teachers should be pursuing is the discovery of vocation, of one’s fate and destiny. Part of learning who you are, part of being able to hear your inner voices, is discovering what it is that you want to do with your life. Finding one’s identity is almost synonymous with finding one’s career” (1993, p.177). The quote perfectly hints at the very thing youth lack, especially when no role model is present, which is education. Education is the ‘starting engine’ of self-actualization and what we as nurses, especially public-health nurses, must provide to both youth and pleasantly ignorant individuals regarding the controversies of e-cigarette use. As healthcare advancements reshape how nurses provide holistic care, we mustn’t forget about what happens to our patients outside of our respective care facility. It is imperative that with the evolving symptoms patients may display in the future, we as nurses are educated enough on the topic of vaping products to address health concerns we may not understand today.

Research Proposal

Investigating the great mysteries of e-cigarette use has been demonstrably difficult provided it’s only been 13 years since its inception. Since e-cigarette’s presence in the modern world, its limited data alongside it’s promotion by large corporations have allowed it to infect youth at an exponential rate as proven by the articles mentioned in the literature review. The

difficulty that lies with e-cigarette research isn't so much the lack of innovative research ideas but how new e-cigarettes are in the modern world. The articles I utilized in the literature review however did an excellent job of gathering statistical analyses that decoded the primary target groups of commercial e-cigarette expansion which has laid the foundation for future research. Unfortunately, there still are many questions about e-cigarettes that are in need of being answered.

Research Questions and Purpose

The proposed research questions for this study:

- Are e-cigarette withdrawal symptoms as symptomatically aggressive or the same as cigarette withdrawal symptoms?
- How does race, ethnicity, or socioeconomic status affect the research question explored?

This researcher hypothesizes that the group of e-cigarette smokers and cigarette smokers would have mirroring withdrawal characteristics but will manifest differently.

The purpose of this study is to primarily examine the vital signs of both e-cigarette and cigarette users once withdrawal symptoms begin. Other assessments would include assessing the participants height, weight, ethnicity, sex, medical history, and the conduction of a psychosocial assessment. The goal of the study is to find both differences and similarities between both groups across the spectrum amid nursing assessments.

Sample

The population of interest will be teenagers and young adults who have reported using tobacco, either through smoking or use of e-cigarette vaping devices. The potential participants will primarily be recruited through rural community health clinics. A convenience sample would include 100 males and 100 females with the goal of having a quarter of each male and female group be ethnically heterogeneous (i.e. Black, White, Hispanic, and Asian). Eight healthy individuals, four males and four females, will also partake in the study while their results act as the independent variables. These figures can easily be attained through the careful selection of study participants from diversified areas and backgrounds throughout the United States. The age range for participants will be 12 through 30 years.

Ethical Considerations

The study will be reviewed for ethical considerations by the university's internal review board and by the internal review boards of the various outpatient clinics participating in the study. Data collection will not begin until approval is received by all appropriate IRBs. Participants will be informed of their rights as participants in research. Participants will be given the choice to decide whether or not they would like to participate. The study will be fully explained, and informed signed consent will be obtained from all participants who are 18 years or older.

Privacy may be of concern to some participants, primarily those that may be underage and don't want their parents knowing if their "using" or not. As a result, all data recorded will be safely secured on a safeguarded computer. All data that is collected will remain confidential. However, participants who are under 18 years of age will need parental or guardian consent and will be provided with the opportunity to assent to participating in the research.

Study Design

The study will be longitudinal and descriptive, using both quantitative and qualitative methods, implementing the use of questionnaires, interviews, and various nursing assessment tools such as vital sign devices (i.e. pulse oximeters, non-contact infrared thermometers, weight scales), charting each participants BMI at every interview, utilizing the psychometric assessment tool BDI (Beck Depression Inventory), and implementing the comprehensive ABCDE assessment.

Descriptive statistics will be utilized to quantitatively describe the demographic characteristics and vital signs of every participant. The independent variables used would be the vital signs and mental health status of eight healthy middle-aged males and females. Four of these individuals are male of a diversified background while the other four are females that have met the same qualifying standards. The healthy participants' vital signs and mental status results would be the dependent variables while the study results of the rest of the participants who are nicotine addicts are the dependent variables. This will allow the study to have a baseline of data to work with in order to use comparative data methods that can possibly answer why certain outcomes were present (i.e. after the study is concluded and all the data has been examined, questions relating to certain outcomes may be addressed).

Questionnaires with open-ended questions will be used to assess stress relieving habits alongside mood swings relative to symptoms of depression. The BDI self-scoring questionnaire will aid in measuring psychiatric fluctuations specific to mood regarding nicotine withdrawal. If any suicidal thoughts are expressed or answers alluding to self-harm are noted on the questionnaire then the participant will be disqualified and subsequently provided a psychiatric

referral. These same participants will also be given brochures and documents pertaining to smoking cessation.

Interviews will be conducted by a nurse researcher and will address questions relating to socioeconomic stability, family history of drug abuse, alcohol intake, psychosocial wellbeing, dual tobacco and vaping product use, and frequency of e-cigarette use. This study will be implemented at local outpatient clinics throughout the United States, primarily in rural areas where e-cigarette and vaping products may have a stronghold. Qualifying participants rendered incapable of transporting themselves to outpatient clinics will have the opportunity to either withdraw from the study or meet with the nurse researcher at a more convenient location.

Recruitment

The recruitment strategy for this study would include finding the appropriate participants who meet the basic e-cigarette usage requirements. These requirements include having smoked tobacco products or vaping products with nicotine at least four times in the past 30 days, be between the ages of 13 and 45, speak fluent English, and have never used illicit drugs. The requirements for the healthy individuals, who's collected data will serve as a baseline for the study, include being free from any mental illness, have never used nicotine or illegal substances, and live in a smoke free environment. Each participant will be briefed on the hypothesized outcomes, expectations of the study, their role on research findings, and the conclusive data found.

Methodology

At the beginning of the study, a questionnaire with demographic information will be completed. Participants will partake in a six-week long series of counseling sessions with a public health nurse. The sessions will take place at a convenient time for participants, once a week for one hour per day, and will focus upon the benefits of discontinuing cigarette or e-cigarette use along with the development of healthier, coping mechanisms. Alternatives to using cigarettes or e-cigarettes that work for each participant, such as exercise, will be explored during the counseling sessions. During each session, vital signs will be recorded, a stress-level assessment will be conducted, and a symptom questionnaire will be filled out. The BDI questionnaire will be used twice, once prior to the first interview and after the last interview, in order to analyze any changes in mental status. Participants who report successfully abstaining from nicotine use for at least three days will have that information recorded.

Analysis

For quantitative data, differences in vital signs before and after discontinuing tobacco use, if applicable, will be examined. In addition, a statistical T-test will be used to examine differences between males and females, if any.

Ideally, participants who qualify and take part of the study will be ethnically diverse. Therefore, the research will not only explore basic differences in experience between e-cigarette users and cigarette smokers in regard to nicotinic withdrawal symptoms, but will also explore the various roles race, ethnicity, and socioeconomic wellbeing may play in tobacco use.

For qualitative data, participants descriptions of symptoms and potential coping strategies will be examined through content analysis, identifying similar words and phrases, organizing word categories, and discerning potential themes.

Conclusion

According to the data presented within the literature review, it is evident that e-cigarette use poses an existential threat to the wellbeing of youth and young-adults within North America. All of the articles that presented a statistical analysis regarding e-cigarette use and perceptions of e-cigarettes came to the conclusion that the branding of e-cigarettes as “healthy tobacco alternatives” are still alive and well. Furthermore, the way e-cigarettes alongside tobacco products were marketed had also been explored pertaining to the incentives of low prices waved in the faces of Native Americans via the industrial machine of big tobacco companies. Considering e-cigarettes and vaping products are a brand-new phenomenon in the 21st century, there is much we don’t know regarding the lifelong effects e-cigarettes alone may have. Further research is required given the latter statement while it still isn’t clear how e-cigarette use will manifest in developing nations in the near future. All in all, it is imperative that nurses be cognizant of the dangers e-cigarettes pose to their patients and how “using” can affect the maintaining or recovery of optimal patient health and nursing intervention effectiveness.

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Appendix

Purpose	Investigator	N	Sample	Design	Major Finding	Strengths	Weaknesses
<p>Objective: Examine the prevalence of e-cigarette use among the Canadian population.</p> <p>Purpose: To analyze and garner a census as to how impactful e-cigarettes have been on Canadian society. Furthermore, another purpose is to microscopically examine e-cigarette use among non-smokers, current smokers, daily smokers, and former smokers which also includes individuals irrespective of age.</p>	Reid, J. L., Rynard, V. L., Czoli, C. D., & Hammond, D. (2015, December). Who is using e-cigarettes in Canada? Nationally representative data on the prevalence of e-cigarette use among Canadians.	14,565	<p>Included various Canadians from all walks of life.</p> <p>All participants were above the age of 15.</p> <p>The study included non-smokers, daily smokers, current smokers, and former smokers.</p>	Quantitative Survey	<ul style="list-style-type: none"> - The study reports the first nationally-representative e-cigarette data in Canada - 8.5% of Canadians have tried an e-cigarette; 1.8% used one in the past month - E-cigarette use varied by smoking status and age, highest among youth/young adults - Dual use was common; the majority of e-cigarette users also smoked cigarettes - Older users were mostly smokers while youth were mostly 'never smokers' 	The study utilized Canadians from all walks of life and put forth a reasonable age group to conduct the study upon. The integration of alternative sources further gave bulk to its validity.	The study failed to examine the differences of e-cigarette use in regard to socioeconomic status.
<p>Objective: Examine the age at initiation of e-cigarette use versus other tobacco products.</p> <p>Purpose: The purpose of the study was to observe the trends of nicotine product use among youth and how initial experimentation differs by age group and cohort.</p>	Evans-Polce, R., Veliz, P., Boyd, C., McCabe, V., & McCabe, S. (2020, February 21). Trends in E-Cigarette, Cigarette, Cigar, and Smokeless Tobacco Use Among US Adolescent Cohorts.	26,662	<p>Participants consisted of 49.9% of males while 67.1% were Caucasian.</p> <p>The age groups focused on in the study were 16 (51.5%) and 17 (48.5%) years old.</p>	Quantitative Survey	<ul style="list-style-type: none"> - The study found that among lifetime e-cigarette users that 63.0% initiated use at the ages of 16 & 17. - The age of e-cigarette users has increased in the younger cohorts (the 2014 cohort at age 12 or younger was at 2.1% while the 2018 cohort at 	<p>-There was a sufficient amount of participants</p> <p>-Tobacco products, alongside e-cigarettes, were used in the study for reasons of comparison</p> <p>- Great longitudinal analysis that honed in on specific participants pertaining to a somewhat diverse population</p>	- N/A

					<p>age 12 or younger surged to 6.8%)</p> <ul style="list-style-type: none"> - There were no changes in age of initiation for any of the cohorts pertaining to the other tobacco products that were also implemented into the study. A decline in age of initiation was specific to e-cigarettes; there were no differences for cigarettes, cigars, or smokeless tobacco products. 		
<p>Objective Examine the perceptions of e-cigarettes among youth in comparison to the perceptions of other smoking options.</p> <p>Purpose The purpose of the study was to statistically analyze the varying perceptions of e-cigarettes and other forms of smoking based primarily on gender but also demographic.</p>	Amrock, S. M., Lee, L., & Weitzman, M. (2016, November 1). Perceptions of e-Cigarettes and Noncigarette Tobacco Products Among US Youth.	22,007	<p>The participants consisted of 6th-12th graders (middle schoolers and high schoolers) who were from public, secular, and non-secular private schools.</p> <p>The study was conducted from 2012-2014</p>	Quantitative /Qualitative Survey	<ul style="list-style-type: none"> - The study found that 73% of middle schoolers and high schoolers believed that e-cigarettes were “better for you” than cigarettes compared to 20.2% for smokeless tobacco and 25.8% for cigars. - 47.1% believed that e-cigarettes were less addictive than cigarettes, compared to 14.0% for smokeless tobacco and 31.5% for cigars. - Use of each product was associated with a perception of 	<p>1) Large sample size to reach generalizability.</p> <p>2) The study examined a diverse group of individuals.</p>	1) N/A

					decreased harm and addictiveness in adjusted analyses, as was being male, being a non-Hispanic white, and residing with a household member who used that product.		
<p>Objective Examine the market strategies of tobacco companies and their market strategies surrounding Native American tribal lands.</p> <p>Purpose The study analyzed e-cigarette, cigarette, and vape products available within a one-mile radius of Tribal Lands in California by tobacco industries that marginalize Native American youth and adults.</p>	<p>Begay, C., Soto, C., Baezconde-Garbanati, L., Barahona, R., Rodriguez, Y. L., Unger, J. B., & Smiley, S. L. (2020, January 7). Cigarette and E-Cigarette Retail Marketing on and Near California Tribal Lands.</p>	<p>Health Representatives (n=8)</p> <p>Store Observations (n=96)</p>	<p>The study conducted consisted of 8 health representatives going to various stores in tribal lands and within a 1-mile radius of Tribal lands.</p>	<p>Quantitative Survey</p>	<ul style="list-style-type: none"> - Among the 96 retail stores that were observed, 32 (33.3%) were gas/convenient stores, 28 (29.2%) were small grocery stores, and 21 (21.9%) were tobacco-focused retailers. - Nearly 14% of retailers were located within a Casino - The majority of retailers within a 1-mile radius of Tribal Lands were either gas/convenient stores or small grocery stores (41.9%) - Of the 96 stores observed both on Tribal Lands and off tribal lands, 52.1% sold e-cigarettes, 39.5% sold flavored e-cigarettes, 27% sold vape pens/vaporizers, and 25% sold 	<ul style="list-style-type: none"> - Study findings can be used to facilitate discussions of comprehensive marketing regulations on Tribal lands that can result in policy change (i.e. based on these data Tribes could consider implementing higher tobacco taxes, advertising restrictions, or policies against discounting cigarettes) - The study data collection protocol utilizing CHR can also be a model for other researchers 	<ul style="list-style-type: none"> - A larger pool of retail stores could have been utilized.

					flavored vape pens/vaporizers.		
<p>Objective/Purpose The present study used a qualitative approach to derive and refine e-cigarette expectancy themes among young adults</p> <p>*Stratification of cigarette use and e-cigarette use yielded four group categories: nonusers; cigarette smokers; e-cigarette vapers; and dual users. Screening questions asked about prior and current use of cigarettes and e-cigarettes.</p>	<p>Harrell, P. T., Brandon, T. H., England, K. J., Barnett, T. E., Brockenberry, L. O., Simmons, V. N., & Quinn, G. P. (2019, August 19). Vaping Expectancies: A Qualitative Study among Young Adult <i>Nonusers</i>, <i>Smokers</i>, <i>Vapers</i>, and Dual Users.</p>	<p>The study started off with 209 participants. 42 were ineligible due to past-month nondaily use, 29 were ineligible due to age, 9 met criteria for a group for which the study was not currently recruiting, and 3 were ineligible due to recent experimental e-cigarette use.</p>	<p>The study initially consisted of 209 but dwindled down to 49 participants total.</p>	<p>Qualitative</p>	<ul style="list-style-type: none"> - Positive Reinforcement: Participants noted various positive effects they felt could arise immediately from e-cigarette use. Numerous sensorimotor experiences were described. - Negative Affect Reduction: Initial codes included Negative Affect Reduction, Weight Control (Appetite Reduction), and Boredom Reduction. However, Stress Reduction emerged as the most important aspect of negative affect mentioned in the groups. As shown in Table 5, participants from all groups felt that Stress Reduction was a reason for using e-cigarettes. Nonusers reported observing people vape "as a stress reliever" and that users "can't function properly" without it. Some smokers were skeptical that e- 	<ul style="list-style-type: none"> - The subsequent use of various themes allowed the study to gauge the different subgroups opinions and personal experiences with e-cigarettes and cigarettes 	<ul style="list-style-type: none"> - A considerable number of participants could've certainly been used to bolster the validity of the studies. - An important limitation is the difference in the sizes of each group, which may have biased the results and categories that were coded. Future studies may consider different inclusion criteria - The sample size lacked diversity in that the majority of participants were male

					cigarettes could provide adequate relief, but some dual users specifically noted that e-cigarettes could be helpful as an alternative to smoking.		
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